

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 2

In the claims

1. (currently amended) A mechanism comprising:
a sealed quantity of electrolytic solution;
a measured quantity of fluid; and,
a membrane exposed to the electrolytic solution on one side and exposed to the fluid on another side, the membrane adapted to cause a droplet of the fluid to be discharged in response to
~~wherein~~ an electric potential applied to the electrolytic solution and that excites the
~~electrolytic solution, causing the membrane to discharge a droplet of the fluid.~~
2. (original) The mechanism of claim 1, further comprising a die encasing the electrolytic solution.
3. (currently amended) The mechanism of claim 2, further comprising a separated pair of electrodes encased with the electrolytic solution by the die, the electrodes adapted to apply the
~~wherein an electric potential applied between the electrodes causes the electric potential to be~~
~~applied to the electrolytic solution and~~ such that the electrolytic solution to be becomes excited.
4. (original) The mechanism of claim 3, further comprising a power source to apply the electric potential between the electrodes.
5. (original) The mechanism of claim 2, wherein the die comprises a silicon die.
6. (original) The mechanism of claim 1, further comprising a nozzle plate over the membrane and holding the measured quantity of fluid.

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 3

7. (original) The mechanism of claim 6, further comprising a fluid supply providing the measured quantity of fluid through an inlet in the nozzle plate.
8. (original) The mechanism of claim 6, wherein the nozzle plate is an injection-molded nozzle plate.
9. (original) The mechanism of claim 1, wherein the membrane is a thin and flexible membrane.
10. (original) The mechanism of claim 1, wherein the electric potential applied to the electrolytic solution pressurizes the electrolytic solution, displacing the membrane, which displaces the fluid, discharging the droplet of the fluid.
11. (original) The mechanism of claim 1, wherein the electric potential applied to the electrolytic solution transfers energy from the electrolytic solution to the membrane, which transfers the energy to the fluid, discharging the droplet of the fluid.
12. (original) The mechanism of claim 11, wherein the energy is transferred from the electrolytic solution to the membrane and from the membrane to the fluid via a shock wave.
13. (withdrawn) A print cartridge comprising:
 - a print head mechanism;
 - a print head motor to advance the print head mechanism horizontally over the media;
 - a die disposed in the print head mechanism and encasing a pair of separated electrodes and
 - a quantity of electrolytic solution;

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 4

a plate disposed in the print head mechanism and holding a quantity of ink; and,
a membrane disposed in the print head mechanism between the die and the plate and
exposed to the electrolytic solution on one side and to the ink on another side,
wherein an electric potential applied between the electrodes excites the electrolytic
solution, causing the membrane to discharge a droplet of the ink.

14. (withdrawn) The print cartridge of claim 13, further comprising an inkjet nozzle disposed
within the print head mechanism, wherein the die, the plate, and the membrane are disposed
within the inkjet nozzle.

15. (withdrawn) The print cartridge of claim 14, further comprising one or more additional
inkjet nozzles disposed within the print head mechanism, each additional inkjet nozzle having
disposed therein:

an additional die encasing a pair of additional separated electrodes and a quantity of
additional electrolytic solution;
an additional plate holding a quantity of additional ink; and,
an additional membrane between the additional die and the additional plate and exposed to
the additional electrolytic solution on one side and to the additional ink on another side,
wherein an electric potential applied between the additional electrodes excites the
additional electrolytic solution, causing the additional membrane to discharge a droplet of the
additional ink.

16. (withdrawn) The print cartridge of claim 13, further comprising an ink supply providing
the quantity of ink through an inlet in the plate.

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 5

17. (withdrawn) The print cartridge of claim 16, further comprising an ink cartridge storing the ink supply.
18. (withdrawn) A method comprising:
applying an electric potential to a sealed quantity of electrolytic solution on one side of a membrane having a measured quantity of fluid on another side of the membrane;
exciting the electrolytic solution as result of the electric potential applied to the electrolytic solution; and,
discharging a droplet of the fluid by the membrane as a result of the electrolytic solution being excited.
19. (withdrawn) The method of claim 18, further comprising, prior to discharging the droplet of the fluid:
pressurizing the electrolytic solution as a result of the electric potential applied to the electrolytic solution; and,
displacing the membrane as a result of the electrolytic solution being pressurized,
wherein the droplet of the fluid is discharged by being displaced as a result of the membrane being displaced.
20. (withdrawn) The method of claim 18, further comprising, prior to discharging the droplet of the fluid:
transferring energy from the electrolytic solution to the membrane as a result of the electric potential applied to the electrolytic solution; and,
transferring the energy from the membrane to the fluid, causing the droplet of the fluid to be discharged.

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 6

21. (new) A mechanism comprising:
a sealed quantity of electrolytic solution;
a quantity of fluid;
a membrane exposed to the electrolytic solution on one side and exposed to the fluid on
another side; and,
means for exciting the electrolytic solution, resulting in the membrane causing a droplet of
the fluid to be discharged.

22. (new) The mechanism of claim 21, wherein the means excites the electrolytic solution by
applying an electric potential to the electrolytic solution.

23. (new) The mechanism of claim 22, wherein the electric potential applied to the
electrolytic solution pressurizes the electrolytic solution, displacing the membrane, which
displaces the fluid, discharging the droplet of the fluid.

24. (new) The mechanism of claim 22, wherein the electric potential applied to the
electrolytic solution transfers energy from the electrolytic solution to the membrane, which
transfers the energy to the fluid, discharging the droplet of the fluid.

25. (new) The mechanism of claim 24, wherein the energy is transferred from the electrolytic
solution to the membrane and from the membrane to the fluid via a shock wave.

26. (new) A mechanism comprising:
a sealed quantity of electrolytic solution;
a quantity of fluid;
a flexible material comprising a first side in contact with the electrolytic solution and a

First named inventor: Carruba
Serial no. 10/001,493
Filed 10/31/2001
Attorney docket no. 10012809-1

Page 7

second side in contact with the fluid; and
a mechanism to apply an electric potential to the electrolytic solution that excites the
electrolytic solution, resulting in the membrane causing a droplet of the fluid to be discharged.

27. (new) The mechanism of claim 26, wherein the mechanism comprises a separated pair of
electrodes encased within the electrolytic solution, the electrodes adapted to apply the electric
potential to the electrolytic solution such that the electrolytic solution becomes excited.

28. (new) The mechanism of claim 26, wherein the electric potential applied to the
electrolytic solution pressurizes the electrolytic solution, displacing the membrane, which
displaces the fluid, discharging the droplet of the fluid.

29. (new) The mechanism of claim 26, wherein the electric potential applied to the
electrolytic solution transfers energy from the electrolytic solution to the membrane, which
transfers the energy to the fluid, discharging the droplet of the fluid.

30. (new) The mechanism of claim 29, wherein the energy is transferred from the electrolytic
solution to the membrane and from the membrane to the fluid via a shock wave.

31. (new) The mechanism of claim 26, further comprising a die encasing the electrolytic
solution.

32. (new) The mechanism of claim 31, wherein the die comprises a silicon die.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.